



November 7, 2008

L-MT-08-068
10 CFR Part 50.73

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Monticello Nuclear Generating Plant
Docket No. 50-263
Renewed License No. DPR-22

LER 2008-005, "Reactor Scram due to Loss of Normal Offsite Power"

A Licensee Event Report (LER) for this occurrence is attached.

This letter contains no new commitments and no revisions to existing commitments.

A handwritten signature in black ink, appearing to read 'Timothy J. O'Connor'.

Timothy J. O'Connor
Site Vice President, Monticello Nuclear Generating Plant
Northern States Power - Minnesota

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Monticello, USNRC
Resident Inspector, Monticello, USNRC

NRC FORM 366 (9-2007)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB NO. 3150-0104 <small>Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bis1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NE08-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.</small>		EXPIRES 8-31-2010					
LICENSEE EVENT REPORT (LER) <small>(See reverse for required number of digits/characters for each block)</small>											
FACILITY NAME (1) Monticello Nuclear Generating Plant				DOCKET NUMBER (2) 05000263		PAGE (3) 1 of 5					
TITLE (4) Reactor Scram due to Loss of Normal Offsite Power											
EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
09	11	2008	2008	- 005	- 00	11	07	2008	FACILITY NAME	DOCKET NUMBER	
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)								
POWER LEVEL (10)		100									
			20.2201(b)			20.2203(a)(3)(ii)			50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
			20.2201(d)			20.2203(a)(4)			50.73(a)(2)(iii)		50.73(a)(2)(x)
			20.2203(a)(1)			50.36(c)(1)(i)(A)		X	50.73(a)(2)(iv)(A)		73.71(a)(4)
			20.2203(a)(2)(i)			50.36(c)(1)(ii)(A)			50.73(a)(2)(v)(A)		73.71(a)(5)
			20.2203(a)(2)(ii)			50.36(c)(2)		X	50.73(a)(2)(v)(B)		OTHER Specify in Abstract below or in NRC Form 366A
			20.2203(a)(2)(iii)			50.46(a)(3)(ii)			50.73(a)(2)(v)(C)		
			20.2203(a)(2)(iv)			50.73(a)(2)(i)(A)			50.73(a)(2)(v)(D)		
			20.2203(a)(2)(v)			50.73(a)(2)(i)(B)			50.73(a)(2)(vii)		
			20.2203(a)(2)(vi)			50.73(a)(2)(i)(C)			50.73(a)(2)(viii)(A)		
			20.2203(a)(3)(i)			50.73(a)(2)(ii)(A)			50.73(a)(2)(viii)(B)		
LICENSEE CONTACT FOR THIS LER (12)											
NAME Ron Baumer								TELEPHONE NUMBER (Include Area Code) 763-295-1357			
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANU- FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU- FACTURER	REPORTABLE TO EPIX		
C	FK	CBL	X000	Y							
SUPPLEMENTAL REPORT EXPECTED (14)								EXPECTED SUBMISSION DATE (15)			
YES (If yes, complete EXPECTED SUBMISSION DATE).					X	NO					
ABSTRACT											
<p>On September 11, 2008 at 2248 hours, the site experienced a lockout of the primary auxiliary transformer with the reserve transformer isolated for planned maintenance. This resulted in a Loss of Normal Off-site Power (LONOP) and an associated SCRAM. The cause of the event was the A and B phase conductors supplying power to the primary auxiliary transformer faulted to ground. Corrective actions taken or planned are: the faulted cable was repaired, repaired other degraded cable splices identified by the extent of condition, and improvements in the cable condition monitoring program.</p>											

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

Event Description

At the Monticello NGP, three transformers are provided to supply the plant with offsite power from the substation. All three sources can independently provide adequate power for the plant's safety-related loads. These transformers and their interconnections to the substation are as follows: The primary station auxiliary transformer (2R) is fed from a 345 KV Bus and underground cabling. The 2R transformer is of adequate size to provide the plant's full auxiliary load requirements. The reserve transformer (1R) is fed from a 115 KV substation via an overhead line. The 1R transformer is of adequate size to provide the plant's full auxiliary load requirements. The reserve auxiliary transformer (1AR) may be fed from two separate 13.8 KV sources. The 1AR transformer is sized to provide only the plant's essential 4160 Vac buses and connected loads.

On September 11, 2008, the plant was operating at 100% power with transformer [XFMR] 1R isolated and tagged out for planned maintenance. Off-site power was supplied via transformer 2R with 1AR and on-site emergency diesel generators (EDGs) [DG] as backup power sources. At approximately 2248 hours, a 34.5 kV breaker [BKR] opened, de-energizing the 2R transformer and causing a Loss of Normal Off-site Power (LONOP). A reactor SCRAM was experienced and all rods inserted normally. Both #11 and #12 EDG auto-started but were not needed for loading. Buses 15 and 16 were automatically powered from 1AR transformer. Control Room operators took action per applicable procedures to control Reactor vessel level and pressure.

During the scram and recovery, the following occurred:

- The High Pressure Coolant Injection (HPCI) [BJ] turbine [TRB] failed to trip at the +48 inch Reactor Vessel level signal. Operators manually isolated the steam line for the turbine. HPCI was declared inoperable and an Event Notification (ENS) was made to the NRC on 09/12/2008 at 0655. Investigation determined the failure of the HPCI to trip was due to three effects: the trip solenoid valve [LSV] had been misassembled, no periodic maintenance on the valve, and a battery voltage well above the minimum required, but slightly below the normally observed voltage. The first two conditions were responsible for the degraded performance of the valve. The battery voltage, while acceptable, did cause the degradation from the misassembled valve and the lack of periodic maintenance to become apparent. The diaphragm was replaced, the valve was reassembled correctly, and HPCI was declared operable.
- The Automatic Depressurization System (ADS) [VB] timer [TMR] showed erratic indication following the event. The ADS auto-initiation was inhibited per procedure. The ADS system was declared inoperable, but manual safety relief valve operation was available. This was reported to the NRC in the event notification made on 09/12/2008 at 0655. Investigation determined the erratic display was due to an issue with the

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indication device and not the actual ADS timer utilized in the Emergency Core Cooling System [BM] logic. The ADS system was declared operable.

- A second Group 2 isolation signal was received when reactor water level lowered below +9 inches while pumping drywell sumps. All Group 2 valves except the drywell sump isolation valves were closed due to a previously reported Group 2 signal. The drywell sump valves had been opened to allow manual pump down of the sumps. The sump valves closed as expected. An ENS notification was made to the NRC on 09/12/2008 at 1656.
- During the event, operators were challenged with isolating water in-sources to the reactor vessel to maintain level. At no time did the reactor water level reach the main steam lines, however, opportunities for improved performance were identified. A review of the reactor vessel level challenges by the Monticello PRA group determined this was of low safety significance.

Event Analysis

The above events were reported under 10 CFR 50.72(b)(2)(iv)(B), "Reactor Protection System Actuation - Critical," 50.72(b)(3)(iv)(A), "Engineered Safety Feature Actuation," and 50.72(b)(3)(v)(B), "Event or Condition that could have prevented Fulfillment of a Safety Function." Therefore, these events are reportable under 50.73(a)(2)(iv), "System Actuation (for RPS and ESF)," and 50.73(a)(2)(v) (B) "an event or condition that could have prevented Fulfillment of a Safety Function (for HPCI)." The loss of HPCI is considered a safety system functional failure.

Safety Significance

The station Probabilistic Risk Analysis group reviewed the event and provided the following safety significance.

Accounting for the Division I RHRSW [BI] system being out of service, and crediting the potential for re-establishing power from the 1R transformer within six hours from the transient, Conditional Core Damage Probability (CCDP) is estimated to be 3.86 E-07, and Conditional Large Early Release Probability (CLERP) is estimated to be 9.76 E-08. 1R transformer recovery within 6 hours is credited with 90% assumed success. Several conditions were evaluated with regard to their potential for complicating recovery from this event, and thus contributing to the assessed risk. Upon reaching the ECCS automatic initiation setpoint, the ADS timer was noticed to be displaying erratically, and ADS logic was inhibited to prevent an inadvertent reactor vessel depressurization. This is assumed to have an insignificant affect on risk since the timer is intended to be inhibited per the EOP's for all emergency events, and the erratic display was strictly an indication device and not the actual ADS timer utilized in the

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ECCS logic. The HPCI [BJ] and RCIC [BN] systems initiated automatically and injected to the reactor normally, but HPCI did not automatically trip at the high water level setpoint. Although the operators were successful at preventing water from filling the steam lines to the point of affecting HPCI and/or RCIC, failing to do so could result in potential negative impact on systems (HPCI, RCIC, and SRV's) that tap off of the steam lines. In the case where HPCI and RCIC are threatened with steam line flooding, much more favorable conditions exist. To be in this condition implies that initial water injection was successful. This results in conditions where vessel water inventory is sub cooled and relatively high, and decay heat levels are relatively low, allowing ample time to recover potentially failed equipment prior to dependence on their availability. Specifically, there is more than adequate time to drain HPCI and RCIC steam lines prior to water level dropping to the top of active fuel. Additionally, Monticello specific thermo-hydraulic calculations show that in cases where reactor water level is initially maintained for a short period (less than one minute) following a non-LOCA transient, nominal CRDH flow to the reactor vessel is adequate to maintain water inventory such that core damage will be precluded.

In conclusion, overall impact of the events on plant safety was small due to minimal increases in the conditional core damage probability (less than $1.0 \text{ E-}06$), and the conditional large early release probability (less than $1.0 \text{ E-}07$).

Cause

The root cause of the event was the A and B phase conductors supplying power to the 2R transformer faulted to ground, resulting in the 34.5 kV Breaker opening as designed to protect equipment from fault current damage. The opening of the 34.5 kV breaker with transformer 1R out of service resulted in a loss of normal off site power (LONOP) and a reactor scram. Due to the destruction of the failed insulation (splice and cable), it is impossible to determine the exact failure mechanism and sequence of the two faults.

Corrective Action

The following corrective actions have been completed or are planned:

- Faulted cable and splice were replaced. Transformer 2R was returned to service.
- Testing identified additional degraded splices, all splices were replaced.
- Identified all underground cable access points and periodically inspect these points for water.
- The station will allocate and prioritize resources to carry out actions established in the Cable Condition Monitoring Program.
- A Preventive Maintenance request was created to include the HPCI solenoid valve in the preventative maintenance schedule.

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- Operational challenges associated with reactor vessel level have been assessed by the station and the results entered into the corrective action program.

Failed Component Identification

Cablec XLPE cables rated at 35 kV, 750 kcmil, 100% insulation, aluminum conductor, manufactured in 1985.

Previous Similar Events

- 6/17/1987: Conductor on a transformer separated from its bushing, causing a voltage disturbance which tripped both Circulating Water pumps. The reactor then scrambled when vacuum decreased.
- 11/25/1997: An underground 480V cable electrical fault led to the loss of the Recombiners and subsequent low vacuum condition. The affected underground cables were replaced.